

Atty. Docket No.: ALPH.P014

Patent Application 09/990,847

**REMARKS**

Claims 1-3 are pending in the application. Claim 1-3 have been amended. Claims 4-23 have been added. No claims have been canceled. No claims have been allowed.

***Rejections under 35 U.S.C. § 102***

Claims 1-3 were rejected as being anticipated by Holzrichter et al., U.S. Patent No. 5,729,694 (hereinafter "Holzrichter"). Applicant respectfully traverses the rejection.

Holzrichter purports to disclose the use of EM radiation in conjunction with simultaneously recorded acoustic speech information to enable mathematical encoding of acoustic speech. (Abstract). Applicants respectfully submit, however, that Holzrichter does not teach or suggest the invention claimed by Applicants. For example, the Office Action states that Holzrichter teaches generating a pulsed excitation function representative of a human vocal tract. Applicants respectfully disagree. Holzrichter does not teach a pulsed excitation function anywhere in the '694 patent. Holzrichter does mention a "voiced excitation" (column 21, line 1), but does not explain how it may be constructed given the signal from the EM sensor. From column 21, lines 4-12:

An EM sensor is positioned in front of the throat at the location of the vocal box (i.e. larynx). It measures the change in EM wave reflection from the vocal folds and surrounding glottal tissue as they open and close. *The user can determine the relative volume of air flow through the glottal opening during the voicing of each voiced acoustic speech unit* (emphasis added). This allows one to measure and generate, in an automated fashion, an accurate voiced speech excitation function of any speaker...

So Holzrichter teaches that a "voiced speech excitation function" may be generated using the EM sensor and the "air flow". There is also no mention of a pulsed excitation. The only guidance given to the reader by Holzrichter is to "calibrate" the EM signal to glottal area using "known physics". From column 21, lines 24-32:

The next step [after obtaining the "field disturbance" EM signal] is to associate each reflection condition *with the area opening of the glottis*. The

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area measurement methods are based upon using known physics of EM wave scattering from dielectric materials, by using mechanical and physiological models of the glottal tissues, and by calibration of EM sensors signals against physical air flow and/or pressure sensors. Then a model of air flow vs. area, based upon fluid dynamic properties, is used.

So, in order to construct the Holzrichter excitation function, one must:

1. Calculate the area of the glottis using the EM signal and physics;
2. Use mechanical and physiological models of the glottal tissues for something; and
3. Calibrate the EM sensor against measured airflow and/or pressure signals.

There is no enablement of any of these steps, although Applicant is aware that lack of enablement of the Holzrichter reference need not be shown to overcome the rejection. It is not at all clear how #1 would occur, there is no specific information in #2, and there is no data presented for #3. Holzrichter states that the excitation function would be a translation of the EM signal to airflow or pressure, but does not demonstrate how this would be done, and this is not trivial.

"Calibrating" the EM signal to glottal area using "known physics, and "using air flow" to somehow arrive at a "voiced speech excitation function" are in fact teaching away from Applicant's claimed method of generating a pulsed excitation function. Applicant's method does not depend on airflow models. Because Holzrichter does not teach the elements of claim 1, but in fact teaches away, Applicants respectfully submit that the invention of claim 1 is not anticipated by Holzrichter.

Claims 2 and 3, as well as new claims 4-8 depend from claim 1 and include further limitations thereon. Accordingly, Applicants respectfully assert that claims 2-8 are allowable over the prior art for the same reasons discussed with reference to claim 1.

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Independent claim 9 recites a system for calculating a plurality of human speech parameters, including:

...a processor coupled to the plurality of microphones and to the at least one sensor, wherein the processor is configured to execute a plurality of algorithms including at least one algorithm for generating a pulse excitation function, wherein generating the pulsed excitation function comprises,

- generating pressure information using at least one derivative of the movement information;
- identifying opening times and closing times of the vocal folds using the pressure information; and
- constructing the pulsed excitation function by generating a curve including negative amplitude pulses at times corresponding to the closing times and positive amplitude pulses at times corresponding to the opening times.

Holzrichter fails to teach, disclose or suggest at least constructing a pulsed excitation function as claimed. For this reason, Applicant respectfully submits that claim 9 and its dependent claims 10-14, are not anticipated by Holzrichter.

Independent claim 15 recites a computer-readable medium having instruction stored thereon, which when executed, cause a processor to calculate a plurality of human speech parameters, including constructing a pulsed excitation function by generating a curve including negative amplitude pulses at times corresponding to closing times of vocal folds and positive amplitude pulses at times corresponding to opening times of vocal folds. Holzrichter fails to teach, disclose or suggest at least constructing a pulsed excitation function as claimed. For this reason, Applicant respectfully submits that claim 15 and its dependent claims 16-22, are not anticipated by Holzrichter.

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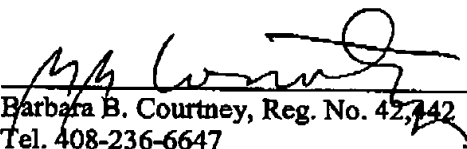
*Patent Application 09/990,847***CONCLUSION**

In view of the foregoing amendments and remarks, Applicants respectfully submit that claims 1-22 are in condition for allowance. The allowance of the claims is earnestly requested. The Examiner is invited to call the undersigned if there are any issues that remain to be resolved prior to allowance of the claims.

**AUTHORIZATION TO CHARGE DEPOSIT ACCOUNT**

Please charge deposit account 501914 for any underpayments in connection with this Office Action response.

Respectfully submitted,  
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